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10 pages total
- petition for ext. of time + dep. Acct.
- Amendment

Signature: Patrick H

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Zenhausern, F.

Serial No. 09/407,581

Filed: September 28, 1999

For: METHOD AND APPARATUS FOR MONITORING MATERIALS USED IN ELECTRONICS

Group Art Unit: 2857
Examiner: Tsai, Carol S.W.

Commissioner for Patents
Washington, D.C. 20231

SIR:

AMENDMENT

In response to the Office Action dated October 10, 2003 the Applicant herein petitions the Commissioner for a one (1) month extension of time under 37 CFR §1.136(a).

Please amend the application as follows:

The currently pending claims and amendments thereto are recited beginning at page 2.

The Applicants' remarks begin at page 6 of this document.

Please amend the claims as follows:

1. (Twice Amended) A non-destructive *in situ* method for [[making or]] directly monitoring an electronic device, comprising the steps of:

measuring at least one outgas or volatile organic compound [[analyte selected from the group consisting]] of a material, a byproduct of the material, a reaction product of a constituent of the material, or a contaminant of a material of the electronic device, by means of a multisensor array comprising at least one solid-state gas sensor [[, a constituent of the material, a byproduct of the material, a reaction product of a constituent of the material, a contaminant, and a tag; the analyte is a gas, vapor, suspension in a gas or volatile organic compound]];

detecting more than one [[physical, chemical, or physico-chemical]] property of the [[analyte]] outgas or volatile organic compound;

combining the detected properties to produce a signal output; and

processing the signal output with multivariate analysis to convert the signal output into information representative of a quality of the material [[, a constituent of the material, or a variable in processing the material]].

2. (Amended) A method according to claim 1 wherein the multivariate analysis comprises processing the signal output with a pattern recognition algorithm [[sufficient to classify, compare, or discriminate the material based on at least one member selected from the group consisting of quantity, quality, performance, physical, chemical, physico-chemical properties, environmental effects, or timing effects]].

3. (Original) A method according to claim 2 wherein the multivariate analysis uses unsupervised statistical pattern recognition.

4. (Original) A method according to claim 2 wherein the multivariate analysis uses supervised statistical pattern recognition.

5. (Original) A method according to claim 1 wherein the analysis is at least one member selected from the group consisting of classical least squares (CLS), inverse least squares (ILS), partial least squares (PLS), principal components analysis (PCA), principle components regression (PCR), nonlinear principle components regression (NLPCR), nonlinear partial least squares (NLPLS), deterministic finite-state automata (DFA), Fast Look-up Algorithm for String Homology (FLASH), pattern recognition, and neural networks.

6. (Amended) A method according to claim 1 wherein the processing step comprises sensory evaluation of the sample materials by human paneling to determine the quality of the material.

7. (Amended) A method according to claim 1 wherein [[in]] the step of measuring [[an analyte]] uses a near-field probe sensor which comprises a coated optical fiber [[is used for measuring the at least one analyte]].

9. (Cancel)

10. (Amended) A method according to claim 1 wherein [[in the measuring step the at least one analyte]] at least one outgas or volatile organic compound is collected by a static or dynamic headspace technique in the measuring step.

11. (Amended) A method according to claim 10, wherein [[at least one member of the group consisting of]] heat, electromagnetic radiation, electricity, magnetism, [[and]] or mechanical vibration assists in transferring the at least one [[analyte]] outgas or volatile organic compound from the material [[to the gas, vapor, suspension in a gas or volatile organic compound]].

12. (Amended) A method according to claim 1 wherein at least one member of the group consisting of a semiconductor gas sensing device, a conductive polymer gas sensing device, a surface acoustic wave gas sensing device, a microbar sensing device, a micromechanical probe, a quartz crystal microbalance, and an optical sensor is used in the detecting step.

13. (Amended) A method according to claim 1 wherein at least a metal oxide semiconductor gas sensing device is used in the detecting step.

15. (Twice Amended) A method according to claim 1, wherein the electronic device [[is]] comprises a circuit board or a multichip module.

16. (Amended) A method according to claim 1, wherein the [[contaminant]] outgas or volatile organic compound is at least one member of the group consisting of anions, organic acids, organics, and particulates.

17. (Cancel)

18. (Original) A method according to claim 15 wherein the circuit board is in a soldering operation.

19. (Original) A method according to claim 15 wherein the circuit board uses surface mount technology.

43. (Twice Amended) An apparatus for probing [[at least the]] a quality of a material used in electronics or optics, comprising:

a multivariate detector having at least one [[of a]] solid-state gas sensing probe[[, sensing location, or physicochemical property]],

the multivariate detector capable of detecting at least one outgas or volatile organic compound [[analyte selected from the group consisting of]] from the material, a constituent of the material, a byproduct of the material, [[and]] a reaction product of a constituent of the material, or a contaminant of the material [[and a tag]];

transmission means for transmitting a signal between the multivariate detector and a data acquisition system, the data acquisition system capable of converting the signal into raw data;

a computational device capable of processing at least part of the raw data using multivariate analysis to create a data set; and

an output device capable of displaying, storing, or using the data set.

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